July 17, 2003

Mr. David A. Lochbaum
Union of Concerned Scientists
1707 H Street, NW, Suite 600
Washington, DC 20006-3919

Dear Mr. Lochbaum:

I am responding to your July 1, 2003, letter to the Chairman in which you requested that the NRC terminate its efforts on Bulletin 2003-01, "Potential Impact of Debris Blockage on Emergency Sump Recirculation at Pressurized-Water Reactors." As you explained in your letter, your request is based on your concerns that Bulletin 2003-01 may have unintended adverse effects on the safety of pressurized-water reactors (PWRs). Your letter also expressed your concerns regarding the appropriateness of verbal and written guidance provided by the NRC staff during a public meeting on Bulletin 2003-01 on June 30, 2003.

Prior to responding to your request that Bulletin 2003-01 be retracted, it is necessary for me to address the safety concerns identified in your letter.

Please note that, prior to the issuance of the bulletin, the NRC staff had carefully examined the safety implications of the interim measures suggested in Bulletin 2003-01 for the prevention and mitigation of adverse effects that could result from debris blocking required flowpaths during an accident. Your letter asserts that the degraded conditions discovered at the Davis-Besse facility accelerated the NRC's response to debris blockage concerns. I would like to emphasize that the suggested interim measures in Bulletin 2003-01 are not a reflexive or unconsidered reaction to those discoveries. As the bulletin discusses, the NRC's detailed assessment of PWR sump performance includes a recently completed study of the risk reduction that can be achieved by operator actions to recover from debris blockage. The insights derived from this work indicate that PWR licensees should consider implementing interim measures such as those listed in Bulletin 2003-01 as an effective means to enhance the safety of their facilities. To add historical perspective, I would also like to mention that the suggested interim measures in Bulletin 2003-01 are very similar to earlier suggestions made by the NRC staff to boiling-water reactor licensees as they addressed a comparable debris blockage issue in the mid-1990s and to other NRC staff suggestions concerning accident management strategies from the late 1980s.

In addition, prior to making any changes to their facilities, including taking temporary interim measures, NRC regulations require licensees to evaluate the changes to ensure that they do not have adverse safety consequences. Bulletin 2003-01 does not exempt licensees from this requirement.

To complement the high level discussion above, I would like to address the specific concerns in your letter that you use to illustrate why you consider Bulletin 2003-01 to be adverse to safety.

First, you stated that the containment building could lose integrity if alternative water sources used for cooling the reactor core and containment cannot be stopped when necessary, and the containment is filled to a level beyond its capacity. You stated that you believe this concern is credible based on NRC staff guidance during the June 30 public meeting which endorsed the use of non-safety-related equipment if safety-related long-term cooling is unavailable. I agree that maintaining the integrity of containment is a very important consideration, particularly during an accident. The written guidance provided by the NRC staff at the public meeting reflects this position by cautioning licensees to consider containment integrity when determining the appropriateness of using alternative water sources for accident mitigation. As typical containment structures are considerably more robust than they are given credit for in design analyses, the NRC staff believes that, without jeopardizing containment integrity, most licensees would be able to inject substantive amounts of water from alternative sources if the capability for sump recirculation was lost. If the primary method for shutting off an alternative water source failed, the filling of the relatively large containment volume would be expected to occur slowly enough that plant operators could successfully shut off or isolate the water source through secondary means before the containment was filled to an unsafe level. Probabilistic risk assessment (PRA) provides a means to evaluate the significance of overfilling containment in comparison to other possible events, such as operators' failing to use alternative water sources as a last resort to cool the reactor core, leading to core damage and potential containment failure. Insights from PRA studies confirm that the appropriate use of alternative water sources and other non-safety-related equipment can be beneficial for accident mitigation, and actions utilizing these resources have long been included in the emergency operating procedures for many plants.

Next, your letter discusses interim measures regarding debris blockage at restrictions in containment drainage flowpaths, such as wire mesh doors, which could prevent adequate quantities of water from reaching the containment sump. In particular, you stated that the NRC staff verbally suggested during the June 30 public meeting that it might be advantageous for licensees to open wire mesh doors to radiation areas with the plant at power, which would contradict lessons learned from occurrences of personnel overexposure to radiation. The staff's written guidance on this issue indicates that licensees should ensure that restrictions in required containment drainage flowpaths, such as floor drains, are not plugged up with debris. The written guidance further indicates that licensees may also consider modifications to wire mesh doors and other containment flow restrictions, but does not explicitly state that such modifications must conform to associated regulatory requirements and account for the radiological concerns pointed out in your letter. We appreciate your observation, and, in an attempt to correct any misunderstandings regarding the staff's verbal and written responses regarding this issue, the staff will reconsider its written guidance from the public meeting and make clarifications as necessary. An additional clarification I would like to make in conjunction with your discussion of this issue is that the NRC staff's statement that it "is not expecting lengthy, detailed analysis" only pertains to explanations of why an interim measure is unnecessary and will not be implemented. I would like to emphasize the context of this statement to make clear that the NRC staff did not mean that it is acceptable for licensees to take shortcuts in demonstrating that all interim measures implemented at their facilities are safe. As I stated above, NRC regulations require that licensees evaluate all changes to their facilities to ensure that safety is maintained.

Another concern you raised is that adverse safety effects could result from PWR licensees' shutting off a redundant train of the emergency core cooling system and/or containment spray system. Your letter further suggests that the NRC staff is encouraging licensees to shut off redundant trains of safety equipment without first verifying that this action is safe for their facilities, and that the staff essentially told a licensee concerned about inconsistencies between this interim measure and its safety analysis to "wing it." In responding to these concerns, first let me say that advising a licensee to approach safety casually would be fundamentally opposed to the very mission of the NRC. If any of the staff's verbal public meeting responses gave you the impression that the NRC is not requiring that licensees review each interim compensatory measure they implement to ensure that it is safe for their facility prior to implementation, it was unintentional. Shutting off redundant safety pumps is a very serious decision, requiring careful consideration. The gravity of this issue is recognized in the written guidance provided by the NRC staff at the June 30 public meeting, which indicates repeatedly that (1) such measures may require detailed and complex safety reviews that may extend beyond the 60-day response period of the bulletin, (2) the bulletin does not allow licensees to violate their safety analyses or other regulatory requirements by implementing an interim measure, and (3) licensees should have a qualitative basis for concluding that the interim measures implemented will reduce risk. Although I agree that it may be imprudent for licensees to shut off redundant safety pumps when full performance of the recirculation sump is assured, the NRC's analysis indicates that plants with potentially degraded sumps can achieve risk reductions by implementing measures such as those listed in Bulletin 2003-01. In response to your concern that operators might mistakenly terminate all flow to the reactor core, as occurred during the accident at Three Mile Island (TMI) Unit 2, the NRC has considered this possibility. Many safety improvements have been made in the design and operation of nuclear power plants since the TMI accident, enhancing the capability of operators to successfully respond to accident conditions. Weighing the risk of adverse effects from operator errors against the benefits from avoiding or delaying sump recirculation for certain PWRs with potentially degraded sumps, shutting off redundant safety pumps may be beneficial overall and should be considered by licensees of such PWRs.

You also expressed concern that the devotion of NRC and industry resources to the interim measures suggested in Bulletin 2003-01 could result in delaying any corrective actions that may be necessary to complete the NRC's efforts on Generic Safety Issue (GSI) 191. The NRC is making its best effort to complete the resolution of GSI-191 in a timely manner, and we recognize that it would be counterproductive to allow interim measures to significantly delay corrective actions. The NRC staff has evaluated the information currently available and concluded that the impact of Bulletin 2003-01 on the scheduled closure of GSI-191 will be minimal.

The conclusion of your letter is that Bulletin 2003-01 should be retracted because it is inconsistent with the NRC's four performance goals: (1) maintain safety, (2) increase efficiency and effectiveness, (3) improve public confidence, and (4) reduce unnecessary regulatory burden. Among the NRC's performance goals, maintaining safety is preeminent. During the multiyear period over which the resolution of GSI-191 is being evaluated and implemented at each PWR facility, the NRC believes that Bulletin 2003-01 will provide additional assurance that PWR licensees are taking appropriate measures to ensure that the health and safety of the public is protected. Therefore, I consider Bulletin 2003-01 to be consistent with the NRC's performance goal of maintaining safety and believe it is essential for the NRC staff to continue its efforts on the bulletin.

I appreciate being informed of your concerns regarding Bulletin 2003-01 and I hope that this letter has been responsive to them. Please let me know if you have any additional concerns regarding this matter.

Sincerely,

/RA/

Samuel J. Collins, Director
Office of Nuclear Reactor Regulation

I appreciate being informed of your concerns regarding Bulletin 2003-01 and I hope that this letter has been responsive to them. Please let me know if you have any additional concerns regarding this matter.

Sincerely,

/RA/

Samuel J. Collins, Director
Office of Nuclear Reactor Regulation

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